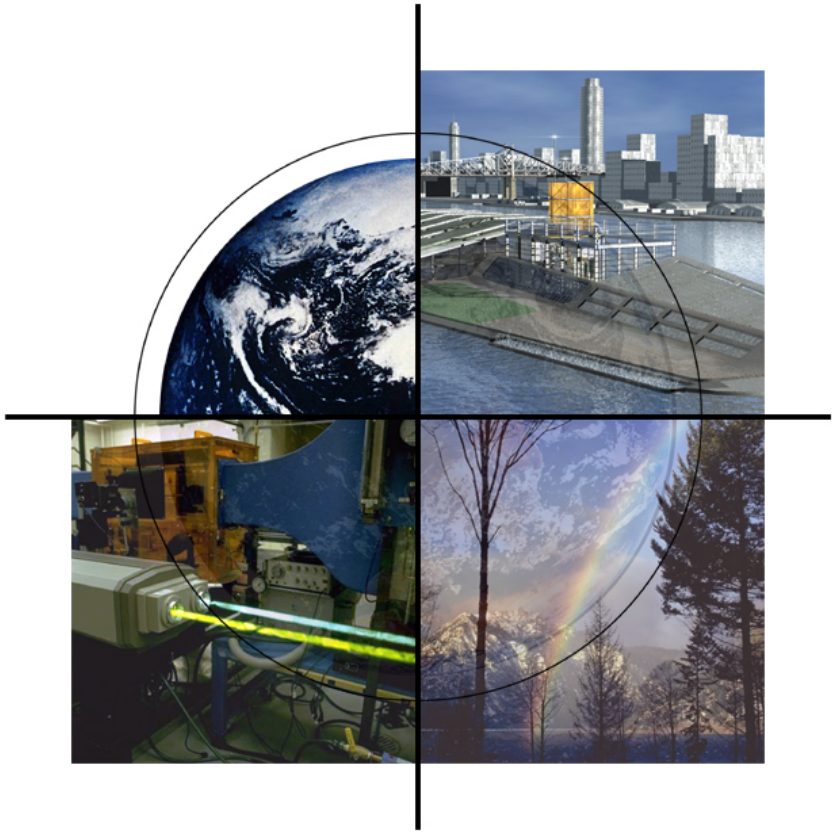
UCR and HBCU/OMI Research Programs



UCR/HBCU/ Program Review Meeting

Pittsburgh, PA
June 7-8, 2005

Robert R. Romanosky, Technology Manager
National Energy Technology Laboratory

Advanced Research - Power Systems

Ingenuity, innovation and implementation

Objectives

- Bridge the gap between basic and applied research
- Foster the development of innovative systems
- Improve efficiency and environmental performance, reduce cost

Computational Energy Sciences
Scientific Consortium, visualization, Modeling, and simulation

Advanced materials consortium for ultra-supercritical power plants

R&D Activities

- ***Advanced Materials***
- ***Novel Sensors & Controls***
- ***Adv Power Plant Simulations***
- ***Bioprocessing Technologies***
- ***Educational Foundation Programs (UCR, HBCU/OMI)***

University Coal Research Program

The University Coal Research (UCR) Program has maintained three specific goals since its inception in 1980 (by Congressional direction):

- Sustain a national university program of research in energy and environmental science and engineering related to coal that focuses on innovative and fundamental investigations pertinent to coal conversion and utilization;

- Provide a future supply of coal scientists and engineers through research exposure in coal technologies while advancing the science of clean energy from coal; and

- Improve our fundamental scientific and technical understanding of chemical and physical processes involved in the conversion and utilization of coal, one of our nation's most abundant natural resources and by-products from coal processing.

Historically Black Colleges & Universities/ Other Minority Institutions (HBCU/OMI)

The HBCU/OMI Program emphasizes improving energy/environmental capabilities in advanced coal, oil, gas, and environmental technology concepts, and supports the education of scientists and engineers from diverse backgrounds by sponsoring research in support of NETL's technology lines at schools designated as HBCU/OMI. The Advanced Research Technology Team strives to accomplish the following goals:

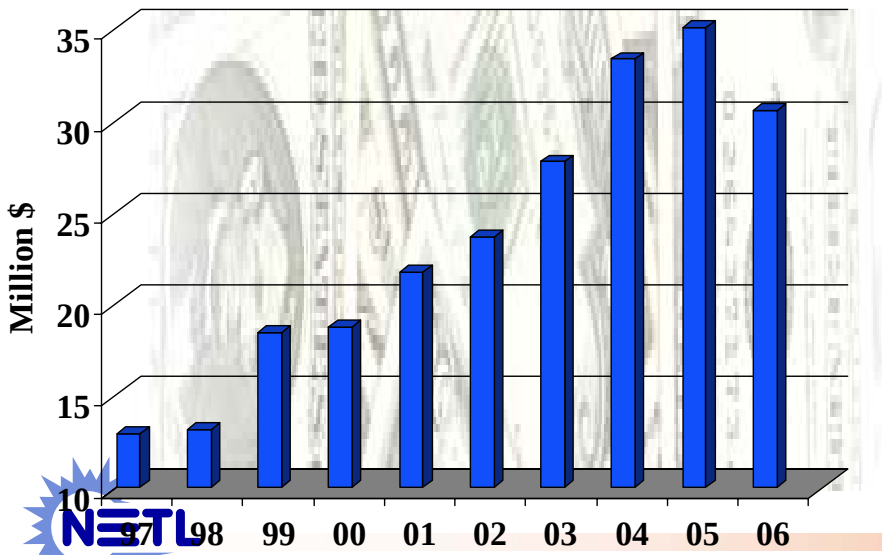
- Provide and promote opportunities for HBCU/OMI in science and engineering.
- Foster private sector participation and interaction with HBCU/OMI in fossil energy-related programs.
- Provide a forum to facilitate technology transfer, strengthen educational training, and develop/enhance the research infrastructure capabilities of HBCU/OMI.

Advanced Research Program

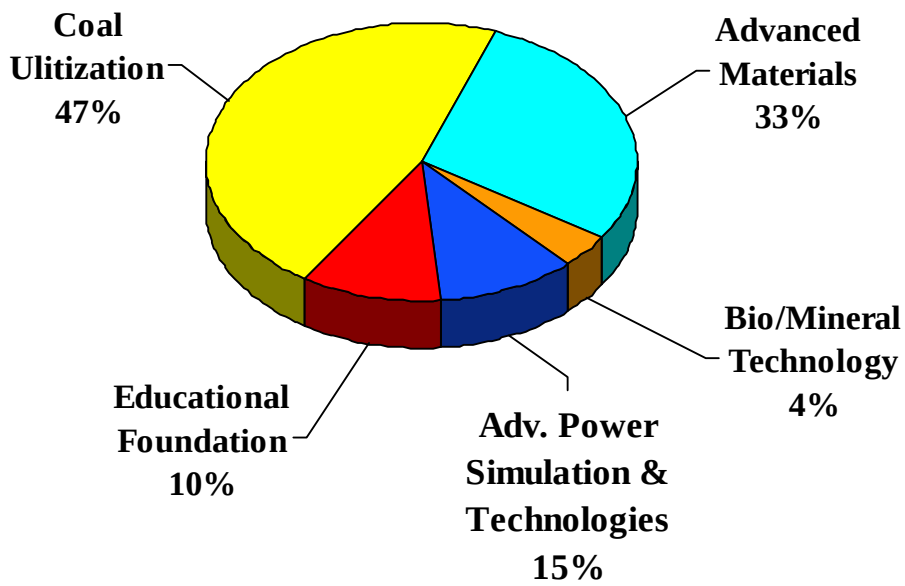
Projects by Organization

• Industry	35
• University	51
• National Laboratories	12
• Non-Profit	4
Total	102

Annual Budget

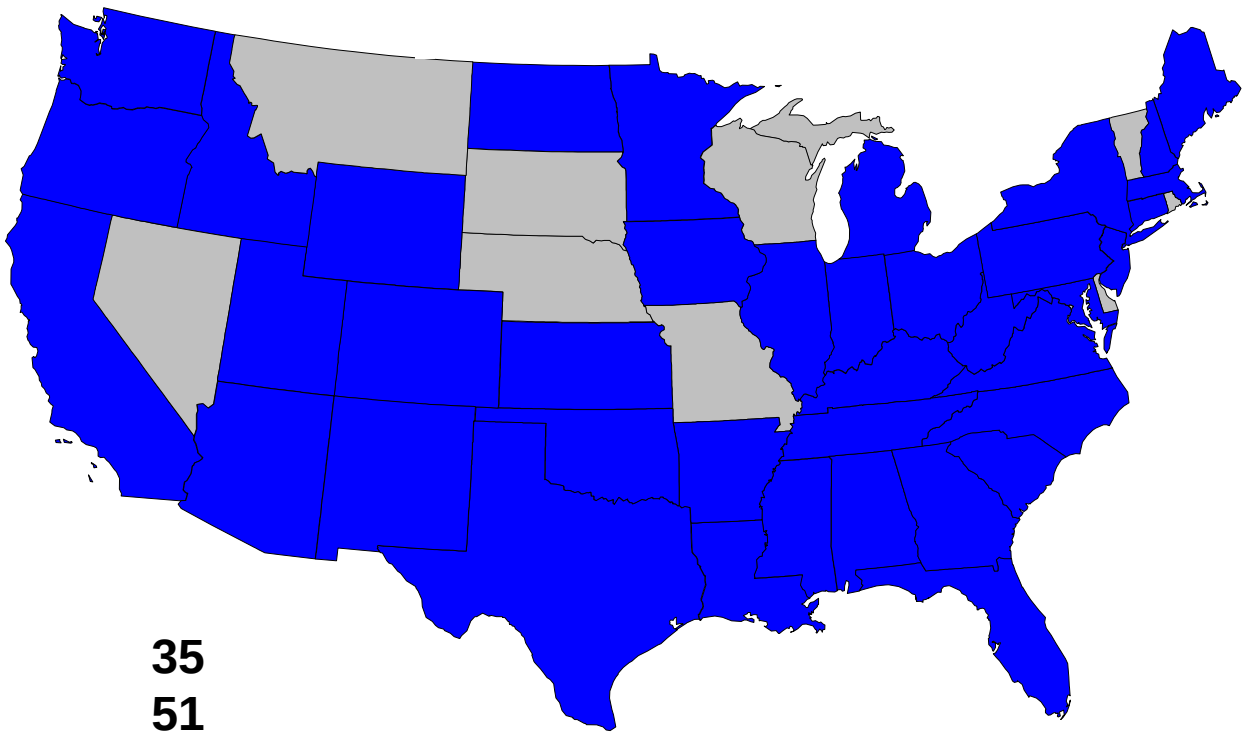


FY05 Budget Allocation



Advanced Research Congressional Breath

FY2005 Projects by State



States with AR Projects

Organizations

• Industry	35
• University	51
• National Laboratories	12
• Non-Profit	4
Total	102

University Coal Research Statistics

- **During the Past Seven Years:**
  - 146 institutional grants awarded
  - 1130 technical papers published
    - Technical Awards
      >7
    - Patents Issued
      >9

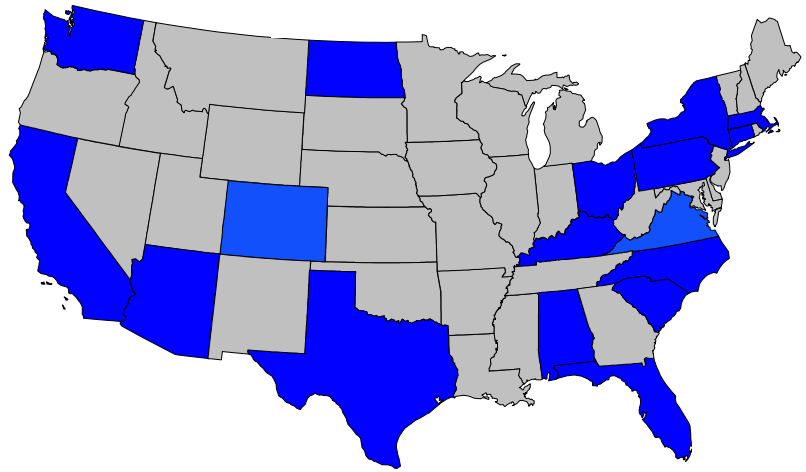
Educational Benefits

- Numerous B.S., M.S., Ph.D. Graduates
- Post-doctoral Research
- Interns

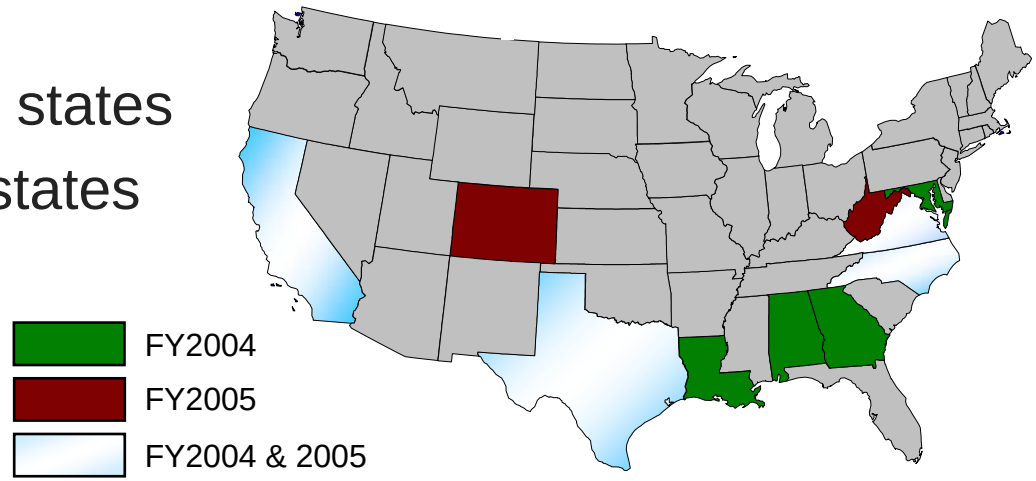
<u>Economic Benefit</u>
Approximately $12 million in Annual Salary Return

Program Awards

- **UCR**
  - FY2004 had 26 awards in 17 states



- **HBCU/OMI**
  - FY2004 had 10 awards in 8 states
  - FY2005 had 7 awards in 6 states



Future Directions In UCR/HBCU

- Solicitation date changing from late fall to April-May timeframe
- Award date changing to end of calendar year
- Programs will have mortgages rather than full funding at award
- The program will be re-structured with research emphasis on top priorities in fossil energy program needs

AR Scientific Awards

1985	Roe-Hoan Yoon	Camicia Award
1988	Irving Wender	First Lowry Award
1995	Adel Sarofim	Lowry Award
1995	Roe-Hoan Yoon	Alumni Award
1998	A. N. Murty	White House Award for Science & Technology
2002	Douglas Smoot	Lowry Award